

Virginia Wildlife

JUNE 1978
50¢



PETER A. STRZELEVICZ

Virginia Wildlife

June, 1978, Volume XXXIX, No. 6

Dedicated to the Conservation of Virginia's
Wildlife and Related Natural Resources

COMMONWEALTH OF VIRGINIA
JOHN N. DALTON, GOVERNOR

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Virginia Wildlife is published monthly in Richmond, Va. by the Commission of Game and Inland Fisheries, 4010 W. Broad St. All magazine subscriptions, changes of address and inquiries should be sent to PO Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs and sketches of good quality which deal with Virginia's soil, water, forests and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and *Virginia Wildlife*, but clearance should also be obtained from contributing free-lance writers, artists and photographers to reproduce their work.

SUBSCRIPTIONS: One year, \$3, three years \$7.50. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P.O. Box 11104, Richmond, VA 23230.

Observations, conclusions and opinions expressed in **VIRGINIA WILDLIFE** are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

Special Second Class Postage paid in Richmond, Va.

Features

- | | |
|----|--|
| 6 | ROCK CASTLE GORGE, by Stuart Johnson
<i>A Once Bustling Mountain Cove Now Deserted</i> |
| 8 | TRAVELS WITH CHARLOTTE, by E. G. Maxwell
<i>In the Sweetest Bud the Eating Canker Dwells</i> |
| 9 | A BEAVER'S TAIL, by Joan N. Cone
<i>What Do You Do With One?</i> |
| 10 | DON'T EAT THE GARBAGE, by Mary E. Baptiste Gouveia
<i>The Park Ranger Vs. Yogi Isn't Really Funny</i> |
| 12 | PEOPLE IN THE OUTDOORS
<i>Virginia Wildlife Photo Contest Winners</i> |
| 14 | SUNFISH, by Pete Elkins
<i>Though Small, They are an Important Freshwater Fish</i> |
| 16 | EARTHWORMS FOR FUN & PROFIT, by Chris Kohler
<i>These Slimy Annelids Can Turn to Gold</i> |
| 19 | TREE SWALLOW, by Danny Ebert and Donald Francis
<i>The Best Known of our Swallows, it Can be Found in Virginia Year-round</i> |
| 20 | DAISIES OF VIRGINIA, by Bill Weekes
<i>A Kaleidoscope of Color, They Brighten our Summer</i> |
| 22 | HEARTWORMS, by Danny J. Ebert and Rhodes Holliman
<i>A Growing Menace to Virginia's Dog Population</i> |
| 28 | A MIXED BAG, by Karen Green
<i>A Williamsburg Weekend Becomes a Seafood Delight</i> |
| 31 | ROUGHFISH, by Richard Hardy
<i>Their Fans are Few, Their Qualities Many</i> |

Departments

- | | |
|----|-----------------------|
| 5 | Editorial/Letters |
| 18 | Conservationgram |
| 24 | Wildlife Kaleidoscope |
| 26 | On the Waterfront |
| 32 | Personalities |
| 33 | Growing Up Outdoors |
| 34 | It Appears to Me |
| 35 | In Nature's Garden |
| 39 | Bird of the Month |

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COVER: Northern Pike, by Peter A. Strzelewicz, Dudley, Mass.

Editorial

AN ENVIRONMENTAL VICTORY!

On March 28, Governor John N. Dalton signed H.B. 154, the Staunton Scenic River Bill, undoubtedly one of the most significant pieces of conservation legislation ever enacted in Virginia. Enactment followed the long, sometimes bitter, struggle that resulted in an initial temporary designation in 1975, with permanent designation accomplished during the recent legislative session. It is encouraging to note that there was only one dissenting vote between both the House and Senate.

Congratulations are due to Delegate Frank Slayton for his courageous leadership and also to Senator Howard Anderson and Delegate Joe Crouch for their invaluable assistance. Additionally, thanks are due to BASS, the Virginia Wildlife Federation, the Float Fishermen of Virginia, Trout Unlimited, the Conservation Council of Virginia, the Izaak Walton League, the Kerr Lake Protective Association, the Boards of Supervisors of Campbell, Halifax and Charlotte Counties, and the Friends of the Staunton River, the group whose Staunton River Festival focused attention on the natural values of the river. My colleagues at the Commission of Game and Inland Fisheries offered much support and aid.

In the debates before the legislative committees, attention was centered on the economic and social values to be protected. These included high quality canoeing water, unique historic sites, outstanding aesthetic values and irreplaceable wildlife habitat. However, most importantly, the Staunton's status as

the spawning grounds of Virginia's landlocked striped bass was stressed. It has been estimated that these grounds have an economic value of up to \$65,000,000 per year. These factors, along with strong local citizen support and expert testimony pointing up the probable technical and financial consequences, appeared to carry the day.

However, the real significance of this victory is the precedent it established: for the first time in the history of the Commonwealth it has become clear that Virginians armed with valid economic statistics and scientific information, along with supportive technical testimony, can mount an effective effort to encourage their elected representatives to take constructive steps in the management and protection of our natural resources.

It is important, however, that the gathering strength, cohesiveness and political sophistication of the conservation movement be used with discretion and thoughtfulness. Automatic opposition to all impoundments or other major developments will not suffice. As in the case of the Staunton River, the voice of the conservationist will be heard and heeded if it is reasoned and backed with credible data that is consistent and in step with society's long-term goals.

While many of us involved in this struggle feel a great sense of victory, the real challenge lies in the future -- when the needs will be more compelling, the options more limited and the choices more difficult than in the case of the Staunton. Let's keep working together.
--Allan A. Hoffman, M.D.

Letters

SIMPLE WORDING

In your February issue on page 16 appears the word onomatopoeic. As a bird lover, I suggest that Mr. Bennington use simple wording.

T.J. Landis
Norfolk

Onomatoepoeic refers to words that sound like their meaning.

BACK BAY

In the February issue, I take exception to Elizabeth Murray's article on Back Bay. In my opinion, it is hardly fair for one group to deny pleasure to

another. The next step would be to halt football games because of all the worms being crushed to death by spikes.

George L. Saunders, Jr.
Chesapeake

ANIMAL IMPRESSIONS

Your editorial Animal Impressions is a gem. In an era when the public demands the realism of Howard Cosell and the like, along with the stark violence of movies and television, it is a travesty that so few people shoot straight about our wildlife.

Reb Stewart III
Norfolk

CAN YOU FIND IT?

I read your magazine from cover to cover each month and find it fascinating reading. It would be even more interesting if I could locate with some accuracy the places described.

William J. Sowder
Farmville

We will give serious consideration to your suggestion and see if maps or locations can be provided for most of our locale stories. I notice that major outdoor magazines almost always include maps. - Editor



IN ROCK CASTLE GORGE, ONE IS PRESSED ON ALL SIDES BY LIFE. TRY TO IMAGINE WHAT IT WAS LIKE WHEN THE AREA WAS AT THE HEIGHT OF HUMAN DEVELOPMENT: WHEN FARMERS WORKED THEIR FIELDS, WHEN MILLERS GROUND GRAIN AND WHEN CHILDREN PLAYED IN THE WOODS AND ALONG THE STREAM.

ROCK CASTLE GORGE



BY STUART JOHNSON

Rock Castle Gorge has an intriguing name, and the area itself is no less intriguing. Similar coves throughout the southern Appalachians were once the sites of mountain communities, and the banks of Rock Castle Creek were dotted with the houses of people who settled the area just prior to the American Revolution.

The gorge received its name from quartz crystals found there. About 1900, the Rock Castle population reached its peak of 30 families, but by the time the National Park Service acquired the area as part of the Blue Ridge Parkway in 1935, hard times had driven all but 12 families to other places in a search for better living conditions.

At the height of its development, the gorge was filled with the bustle of human activity. Ruins of houses and rail fences can still be seen by the observant visitor. Generations of families spent their lives here and over the years, they changed the face of the land. Many acres of forest were cleared for farmland, timber, and to provide space for building brandy distilleries so more might be gained from apple crops. The power of Rock Castle Creek was harnessed to turn corn into meal and a road was built to the ridge where the Blue Ridge Parkway is today. This allowed the gorge residents to trade with people in other mountain communities.

Many of us live under conditions which hide the real sources of our lives. We take for granted water which comes from a faucet. We believe that the growing potential of the soil comes from chemical fertilizers and television tells us that the air can be improved by spray fresheners and that the sun is for suntans.

Let us try to see Rock Castle Gorge for what it really is -- a community with one goal -- life. A community whose life has the same sources as ours.

The water we drink comes to us from forested areas like Rock Castle Gorge and the soil of many farms where our food is grown originated under conditions similar to those in the gorge. Our air supply is continually revitalized by green plants like those which make the gorge so lush during the summer. The sun that shines over us all is the energy source which makes life possible. Our separation from places like Rock Castle Gorge is only an illusion. So let us look closely at Rock Castle Gorge, for here we may find a forgotten portion of our lives.

Near Floyd, Virginia, Rock Castle Gorge lies on the eastern slope of the Blue Ridge Mountains, a part of the larger Appalachian Mountain chain which was formed by movements within the earth ages ago. Originally, it was not a gorge at all, but was more nearly the height of the ridges on either side of the gorge today. Somewhere, at what is now the southern end of the gorge, a small spring poured its water down the slope of a gentle hill day after day -- year after year. Time passed and the water carried with it the soil of the hill and even began to wear away the rock beneath the soil. And so, a mountain brook was formed. As the brook cut deeper into the hillside, other underground springs and other similar brooks were encountered and the flow and force of the water became greater.

At this same time, rainfall was slowly causing the upper edge of the spring to be eaten away. This upwards erosion encountered other springs and streams so that their waters were added to the flow down the hill. Finally, by wearing away the

hillside, Rock Castle Creek reached its present level on the floor of the gorge. Here the stream, which was once a small brook, begins to level out and widen. After leaving the gorge, the waters of Rock Castle Creek will find their way into larger rivers which eventually flow to the sea. The gorge is still being formed as the creek cuts deeper into the earth, and the series of events which led to the formation of the gorge are being repeated in dozens of small streams which flow down its steep slopes.

In Rock Castle Gorge, one is pressed on all sides by life. Hillside springs abound and retrace the formation of the gorge. The earth is damp to the touch and in concert with the decaying tree litter on the forest floor. The plants and animals of the gorge are nourished. The air is clean and reveals the fact that as long as there is an abundance of the kind of vegetation which is found in the gorge, we will never have to worry about having enough air to breathe. Finally, the specks of sunlight which filter through the dense foliage show that even a brief touch of the sun is enough to support the life there.

Try to imagine what it was like when the gorge was at its height of human development--when farmers worked their fields--when millers ground grain--and when children played in the woods and along the streams. Contrast this with the gorge as it is today. Shrubs and bushes mask former fields--mills have fallen into decay. The only sounds are those of birds, wind through the trees and water rushing onward.

We have a close bond with Rock Castle Gorge. Its settlers depended upon the life processes of the gorge just as we depend on the same processes wherever we may live. Rock Castle Gorge then is only one of an infinite number of places where we may discover these sources.

Travels With Charlotte

BY E. G. MAXWELL

From the beginnings of earth, it seems, evil struggled with the good. Decay tries to devour strength and spirit. Shakespeare stated it in *Two Gentlemen of Verona*:

"In the sweetest bud

The eating canker dwells."

As far back as the Garden of Eden "Charlotte" squirmed through fragrant grass, defiling its freshness with the stench of her sensuous body. She personifies the serpent who dared beguile Eve. She thus became one of the main characters in the plot of life.

Out of the ooze, muck, stench of decay, Charlotte slithered upward, taking her time. There was no hurry either for her life or procreation. Her name was legion. She had a thousand counterparts, wiggling and writhing their way to existence. Charlotte doesn't have real brains, only a built-in mechanism of feeling, yet she realizes where she must squirm, as well as the havoc she must create.

She was a witch if ever there was one, although she was not always so unattractive. Last April, the moonlight sifted down through the apple orchards of Cumberland, while she fluttered from tree to tree. She could fly then, and each upper wing flaunted a golden coil. At the same time, the wing skirt below a pale jade blouse, revealed amber, intermeshed with an even brighter gold. An airy, bright creature, only one half inch in size! Who would guess she pursued a course of devestation?

In April, therefore, she appeared not as an evil one, not as a fiend, but as a symbol of God and light. In the perfume of fresh pale pink blossoms, she pirouetted upon a delicate bud. While she poised and fluttered, she laid her eggs.

How convenient for Charlotte's children, as the fruit begins to grow and closes cozily about them. They don't need Charlotte to feed them. These wormlike larvae hatching from their eggs, eat their way through the apples. They grow plump and wiggly-strong.

Charlotte has become not only a well seasoned traveler. She "made it" from the cradle of civilization in Asia (or wherever the anthropologists have the cradle rocking at present) to every section of Europe where



pears, apples, or English walnuts grow. Not only does she migrate from country to country, but she has her own private traveling cycle, usually several generations a year.

In the fall as she emerges from her favorite fruit she pupates on the bark of the tree, hibernating and awaiting her advent as a "vision of wings and light."

Man has learned to anticipate her reign of horror. By spraying or by upsetting her biological clock, he can, to some extent, curb her destruction. Farmers and fruit growers call her awful names, but her proper name is "Codling Moth."

Most people enjoy the crisp, cidery flavor of a juicy apple. How fragrant the orchards smell in early fall. Yet, that's the time the serpent dares to rear her ugly head.

The young scientist knew all this as he and his girl walked hand in hand beneath the heavily laden trees. For an instant he was thinking not of his delectable companion but of the delectable fruit. What a shame that most insecticides had become ineffective. Suddenly entomologists discovered the biocides weren't working. The sprays destroyed not only the codling moths, but also the natural enemies of the pests.

Recently, however, entomologists discovered they could upset the biological clock of codling moths, by exposing them to additional hours of light in the fall. The moths, tricked into thinking spring had come and the days were longer, emerged from their pupa stage and died in the cold. Could it work, he wondered, as with his free hand he snatched at a red apple. It smelled fresh, delicious. He took a crunchy bite. How juicy!

"Want one, dear?" he asked.

"Well, I..." she hesitated, and as she did, he let out a howl.

"Wow, just look at that worm!" while he hurled the apple from him.

His girl wasn't too sympathetic. "Never worry about finding a worm in your apple, Adam. Only worry if you find half a worm!"

However, Charlotte reared her evil head out of her juicy home. How glad she was that he hadn't found half a worm! Now, if all went well, she'd multiply and multiply and there'd be a million more Charlottes to travel on!

What Do You Do With a Beaver's Tale?

by JOAN N. CONE

Remember all those stories you've read about the mountain men squatting about a campfire gnawing beaver tails? Whoever wrote those tales had never eaten beaver, that's for certain. Yet this animal, probably more than any other, was responsible for most of the early exploration here on our North American continent. He was sought, not for meat, but for fur; and to this day Hudson Bay Company blankets are rated for warmth by points which indicate one, two, three, or four beaver pelts in exchange.

All you really need to do after skinning the beaver, is remove all fat and cut it into suitable pieces. Naturally, you'll want a small to medium-size one by choice, although even larger beaver are quite palatable.

Some of the best ways to cook beaver are in the slow-cooking crock pots, which let you go out and hunt all day before returning to a delicious meal.

CHICKAHOMINY BEAVER

1 small to medium beaver cut into serving pieces	½ cup vinegar
Salt	1 tablespoon brown sugar
2 teaspoons instant onion	1 teaspoon dry mustard
½ cup ketchup	1 cup beef bouillon

Salt beaver pieces and place them in bottom of your slow-cooking pot. Combine remaining six ingredients in a small bowl and pour this sauce over your meat. Then cover and cook on LOW setting for 7 to 8 hours. The result is positively delicious!

BEAVER SCALLOPINI

1 small to medium beaver cut into serving pieces	1 small onion, thinly sliced
Flour and salt	1½ teaspoons salt
4 tablespoons butter or margarine	1 teaspoon sugar
1 4-ounce can sliced mushrooms, drained	½ teaspoon oregano 1 1-pound can tomatoes

Roll beaver pieces in seasoned flour and brown in butter. Place in slow-cooking pot and add all your remaining ingredients, stirring together thoroughly. Cover and cook on LOW heat for 7 to 8 hours. Believe me, there won't be any leftovers!

If you own a pressure cooker, it provides another great way to cook beaver. Believe me, the result will be so tender you can cut it with a fork.



Illustration by Diane Grant

TANGY PRESSURE COOKER BEAVER

1 small to medium beaver cut into serving pieces	1 teaspoon instant minced onion
Salt	2 tablespoons lemon juice
2 tablespoons shortening	1 cup water
1 teaspoon paprika	20 stuffed olives, sliced
4 tablespoons brown sugar	

Salt your pieces of beaver. Then turn up the heat under your open pressure cooker, add shortening, and brown the beaver meat. Combine next five ingredients and pour them over the beaver. Sprinkle olives on the top of everything else. Then close the cover securely and cook at 15 pounds pressure for 20 to 25 minutes, depending on size of beaver. Then remove for serving and thicken the gravy. Everyone will yell "More!"

Maybe the most traditional way to cook beaver is by roasting. And here's a great way to go about it.

BEAVER ROASTED WITH BEER BARBECUE SAUCE

1 small to medium beaver cut into serving pieces	3 tablespoons brown sugar
½ teaspoon salt	3 tablespoons lemon juice
1 teaspoon instant minced onion	1 7-ounce bottle of beer
	½ cup chili sauce
	1½ teaspoons Worcestershire sauce

Place your beaver pieces in a foil-lined roasting pan in a 350 degree oven. Roast covered for a half hour. Meanwhile mix other ingredients in a small bowl. After the meat has cooked for one half hour, uncover and pour barbecue sauce over the beaver. Then roast uncovered for an additional 30 to 60 minutes, or until tender. Baste several times with the barbecue sauce. Try this and you'll know why beaver is so popular with our Native Americans.

Oh yes, what do you do with the beaver's tail? It's solid fat and gristle, and the easiest thing is simply throw it away. The rest of the beaver is incomparably good.

Don't eat the garbage

BY MARY E. BAPTISTE GOUVEIA

What happened to all the bears? I've seen bears in this picnic area for the past few years; this year, none. I'm really disappointed."

Such statements typified the sentiment of 1977 visitors to Shenandoah National Park. In previous years, campground and picnic-raiding bears provided nightly entertainment to thousands of visitors with their clumsy, childlike antics. General disappointment was inevitable when visitors returned to the park last year to find the conventional garbage cans replaced by secure bear-proof ones and rangers patrolling campgrounds to encourage people to store all food in their car trunks.

Then there's the other side of the coin. In 1975, bears caused \$14,000 in damages to visitors' ice chests, tents and vehicles. Last summer, a couple left their preschool child in a stroller by their food-laden picnic table while they walked about 10 yards to their car for utensils. They turned back to find a large sow bear heading directly toward the table and the child. After much coaxing, the bear left, but not without causing extreme anxiety on the part of the parents.

The power and potential danger of this mischievous

but attractive animal are seldom realized by the well-meaning park visitor. The impish creature foraging for discarded bread crusts and marshmallows hardly seems more threatening than a fluffy Teddy bear eagerly trying to satisfy the ever-present gnaw in his round tummy. Actually, black bears are capable of outrunning a horse at short distances, biting like dogs, and striking severe blows with their clawed front feet.

The National Park Service readily attests that the bear problem is not unique to Shenandoah. As annual visitation to our national parks steadily increases, new campgrounds and picnic areas are constructed and old ones are enlarged. At the same time, more and more black bears are attracted to the sources of unnatural food made available through visitor carelessness and improper food storage in these developed areas.

Authorities at Shenandoah estimate the present density of black bear in the park to be about one bear per square mile. Although, theoretically, only 10% of these bears have lost their fear of man, heavy visitor use and concentration of these nuisance bears near campgrounds and picnic areas result in a high probability of human/bear contact.

Bears foraging for garbage in campgrounds and picnic areas are not only a hazard to both visitors and property, but also are jeopardizing their physical condition by depriving themselves of more nutritious natural food such as nuts, berries, roots, insects, small mammals, and fish. Also, constant searching for food near people results in a perversion of the bears' natural free-living lifestyle. Bears become dependent on readily available unnatural food and lose all desire to forage for food in the wild. This, too, can have undesirable consequences, as in the case of "Rambling Rose." A 170-pound marauding female bear was live-trapped at Loft Mountain Campground last summer and then released near the West Virginia line about 56 air miles away. Four days later, she appeared at Loft Mountain again. She was trapped a second time and transported to Giles County, about 127 air miles away. It took the bear, now appropriately dubbed "Rambling Rose," about 12 days to find her

Photo by Leonard Lee Rue





way back to Loft Mountain. Next she was taken to Dismal Swamp in southeastern Virginia, a distance of about 175 air miles. A few weeks later, still resisting attempts of officials to persuade her to resume her natural lifestyle, Rose showed up at a picnic area in North Carolina. In late September, she was severely wounded by an automobile and had to be destroyed by State Police.

In an effort to eliminate the Shenandoah Park problem, officials are requiring campers to secure all food that is not being transported, prepared or eaten, by sealing it in a vehicle or by suspending it in a tree at least 10 feet above the ground and 4 feet horizontally from any post, tree trunk or branch. Also, special bear-proof trash receptacles have been installed which have deprived the bears of the majority of the unnatural food which was previously consumed. Park landfills were closed in the spring of 1975. Special pamphlets have been designed and are being distributed at all campgrounds and a display at Byrd Visitor Center last summer warned visitors of the seriousness of the problem. Thus far, the new bear program has been quite successful, but park authorities emphasize that two or three more years of conscious effort are still needed to accomplish the park's ultimate goals.

The main concern of park officials is to maximize visitor enjoyment of the park's scenery, forests and wildlife, while maintaining a high level of public safety. Due to the recent increases in property damage, authorities feel that most visitors are anxious to see bears, but do not entirely understand the danger involved. Research is presently being conducted at Shenandoah in an effort to gain information concerning visitor attitudes and awareness of the problem. It is hoped that a level of public acceptance for non-injurious human/bear interactions can be determined from the results of this study. Ideally, all park visitors should be aware of the dangers and unpredictability of wild animals, particularly bears, and their behavior should be consistent with this awareness. With better education of the public, an understanding of the relationship between man and his ursine companion can be realized--that of two species occupying two distinct and separate niches.

Bear-proof trash cans (below) are a part of the park's efforts to minimize the problems caused by bears (above).





Archie Johnson of Virginia Beach won first place with this moody photograph of a hunter and his dog.

Virginia Wildlife

Photo Contest Winners
People Category



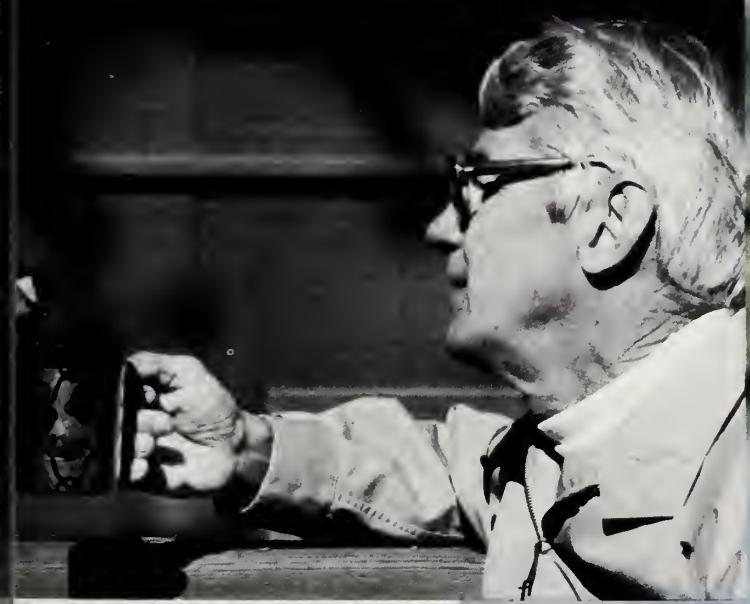
This photograph of a child enjoying a quiet river won an honorable mention for T. W. Schneider of Richmond.



Tony Giannasi of Glen Allen won third place with this photo.



This child, photographed at Rock Creek Nature Center in Washington, D. C., earned a second place for Karen Knapp of Appomattox.



J. M. Van Doren of Richmond won an honorable mention for this photograph of a bird and friend.

SUNFISH

BLUEGILL

PUMPKINSEED

TS. Eliot once described April as the cruellest month of the year; but for the Virginia angler who fancies light tackle, Mr. Eliot was very mistaken. With the arrival of April, winter is only a memory and it's years until another returns. In the warming streams and rivers, the milky green of cold, snow-stained water is clearing, with nymphs and minnows resuming activity in the shallows. Where only a month before was empty water, now bright red-breast sunfish wave green fins in search of insects and careless baitfish. The dusky rock bass's eyes glow a deeper scarlet as sunlight whispers that spawning time is near. Soon the "redeye" will take up his nesting stance in the shadow of a log or boulder, eager to attack any unwary creature that enters his territory. So begins the sunfish season that continues through late summer.

For the fisherman who properly equips himself, no finer sport is possible in fresh water. River and stream sunfish will normally run on the small size when compared to other freshwater gamefish, but a rock bass in the Shenandoah or Maury may exceed one oliver-backed pound. Since the prey is small, maximum sport involves very light tackle, ideally an ultralight spinning reel, matching rod, with two to four pound monofilament.

Such an outfit is well suited to casting the small lures that are most effective for the sunfish family. Any tackle shop has an abundant choice of proper lures; however, as a general guide the lures should be chosen on their basis to perform well in shallow water. This means that a selected spinner has a thin blade that revolves at a crawl of the reel handle. Plugs can be amazingly effective if they're chosen in the $\frac{1}{4}$ -ounce or smaller range. Rock bass, bluegills, and redbreasts will slash into much larger plugs, but hooking them can be frustrating at times because of the large treble hooks.

Two plugs that are consistently good in Virginia waters are small balsa minnow lures that float at rest and dive on retrieve; the other is the $\frac{1}{4}$ -ounce "injured minnow" type plug with a blunt nose and propeller on the tail. These should be plied gently close to the surface. Most fishermen have watched the sunfish approach a surface lure, and know that the approach is usually tentative and timid, with the strike usually coming when the lure is motionless. Remember this, and fish your lures slowly for sunfish. Your stringer will heft the benefit!

In the spring, it's difficult to pick a "bad time" to be on the water, for the sunfish are active throughout the day. As the season progresses, evening and early morning become more productive.

It's far too easy for the uninitiated to lump "sunfish" into one group for fishing purposes. Nothing

could be more erroneous. The various sunfishes are as much unlike as a largemouth and smallmouth bass. For the purposes of this discussion, we'll consider only the rock bass or "redeye" (*Ambloplites rupestris*), the bluegill (*Lepomis macrochirus*), and redbreast sunfish (*Lepomis auritus*), since these are the most commonly encountered sunfish in small rivers and streams of Virginia.

The rock bass is the bully of the trio, with a chunky body and disposition. He is handsome in a mossy sort of way with a flaming red iris and large mouth, extending past the middle of his eye.

Another appealing characteristic of the rock bass is the fact that he keeps good company. Find smallmouth water, and you'll find rock bass.

Also found in smallmouth habitat is the redbreast. This little sunfish is the warrior of his family. His belly is bright orange. His cheeks are striped with vivid warpaint, and his courage is long. The redbreast is more of an insect eater than the rock bass; however, he rarely stops to question the identity of a small, properly presented lure. In a stream or river, look for the redbreast under overhanging banks or near the edge of a swirling current. When the spring sun heats the water into the 65-70 degree range, the redbreast builds his nest in shallow water over a gravel bottom.

Defiance may seem an odd word when applied to the bluegill, for he is the quietest and most reserved of our trio of stream dwellers. To be fair, he is more at home in a lake, but he's often met in still sections of rivers or streams. In contrast to his two eager cousins, the bluegill can be finicky when it comes to artificial lures. He must be approached with respect and stealth.

The explosive exception to this generalization is a bluegill on his spring spawning bed. Once centered in his arena of gravel and sand, the bluegill takes on all comers. The only criterion is that the lure must be small enough to fit into his tightly pursed mouth. The fight

This has been a sadly brief description of what awaits the angler in Virginia streams. A large part of the lure of sunfishing in moving water is the always changing experience; every bend of the stream is another world to explore, another sight to marvel at in the sincerest sense of "marvel." Lay your bass rod down for a day or so; look up the tough featherweights of Virginia waters. Limits on sunfish are liberal with good reason. They are a prolific family, so no qualms should be felt about extracting heavy stringers. The critical danger to the future of this type of fishing is not skilled fishermen, rather pollution by individuals skilled only at bettering business competitors without regard to irreparable harm upon wildlife.



EARTHWORMS FOR FUN & PROFIT

BY CHRISTOPHER C. KOHLER

For centuries, earthworms have been used by anglers as a bait for catching freshwater fishes. As early as 1496, Julia Berners, a Benedictine nun, published an article in England describing the best kind of worms to use and where to find them. The popular fish bait are known by a variety of names--angleworms, earthworms, dew worms, fishworms, gardenworms, groundworms, night crawlers, rainworms, and red-worms. They are worldwide in distribution and range in size from only a fraction of an inch to the giant Australian worms measuring up to 11 feet in length.

Raising earthworms is easy, fun and can be profitable. How profitable depends upon the intensity of culture. An avid fisherman can certainly save a few dollars by raising his own worms. Moreover, many people have capitalized on worm culture by raising enough to sell commercially. Indeed, large-scale earthworm culture endeavors can aptly be described as "big business."

Fortunately, a numerous supply of earthworms is probably right in your own backyard. Earthworms thrive in practically all types of soils. They are especially plentiful in soils rich in organic matter. Generally, worms should be collected in late spring and early summer. At this time, the ground is sufficiently moist and the worms are reproducing.

A simple method for collecting worms is to dig for them with a shovel. Holes should be dug in likely spots such as garden areas, composts heaps, and under large trees.

In late spring, worms can often be found under boards, stones, logs and leaves. If the conditions are

right, many worms can be gathered in this manner with a minimum of time and effort.

One of my favorite methods for collecting worms is to go out on moist nights with a red or dim light. Worms can often be found literally crawling all over the place. Never use a bright light because it nearly always results in the worms retreating back into their burrows. A prime spot for obtaining "night crawlers" is on the green of a golf course. You will also be doing a great service for golfers who consider earthworm burrows a nuisance.

One avid worm collector I know prefers a nearby cemetery for night-time acquisitions. I've often wondered what people would think if they saw him lurking around tombstones with his red light and bucket of worms.

Another simple procedure for collecting worms is "fiddling." A stake is driven into the ground and a thin board is rubbed back and forth over the end of the stake. This motion causes vibrations and the disturbed worms rise to the surface. Tapping the stake will also give good vibrations and usually results in bringing the worms to the surface.

The size and type of containers for raising worms will depend upon individual needs. For raising and storing earthworms outdoors, wooden boxes with the dimensions of 14 x 18 x 6 inches are recommended. This size will allow for easy handling. Holes ($\frac{1}{4}$ inch) should be drilled in the bottom to allow for drainage. Several boxes of this design can be stacked and held apart by small blocks. This arrangement allows for ventilation, drainage and easy access for watering.

Boxes should never be set flat on the ground as this will hasten the onset of wood-rot. The boxes should be covered with burlap to prevent loss of moisture as well as worms. Likewise, the drainage holes should be covered with small sections of rust-resistant screening.

For raising worms indoors it will probably be more convenient to use boxes approximately twice the dimensions as previously described. For indoor use, a more sophisticated cover may be desirable. A wooden frame covered with burlap and hinged to the box makes a nice set-up. The lid can then be fastened shut with a small screen-door hook.

Bin type containers are recommended for large-scale worm culture. Bins should be approximately 5 feet long, 3 feet wide and 2 feet deep. This size bin will support 25,000 worms. For good permanent structures, bins should be built with concrete blocks forming three walls. The fourth wall should be wooden and be removable and to provide adequate drainage a half-inch layer of gravel should be spread on the ground. Boards should be placed over the gravel running the length of the bin. A removable top will be necessary to protect the worms from excessive rain or heat. However, for adequate ventilation, the top should be removed during clear weather. Burlap placed over the soil is always a good idea.

Earthworm culture media can be any one of various combinations of soil and organic material. The media should contain at least one-third rich black soil. The remainder of the mixture can be any combination of the following materials: peat moss, manure, leaf mold, sod, decayed sawdust, straw, hay, or leaves. Periodically, kitchen scraps, fats, cornmeal, or chicken starter should be added to the soil mixture to ensure an adequate food supply for the worms.

Of paramount importance in rearing earthworms is moisture. Cultures should be kept moist, but not soggy, at all times.

Approximately 400 mature worms (over 2 inches) should be stocked for box-cultures. For bin-cultures a proportionately larger stocking will be necessary. Within three weeks, the breeder worms will have produced enough egg-capsules so that the adults can be removed and stocked in another box. The worms can be harvested when they reach marketable size (2 inches or more). At least three months will be required. After culturing the resulting compost is rich in organic matter. The worm medium is excellent as potting soil and in some areas commands a high sale value.

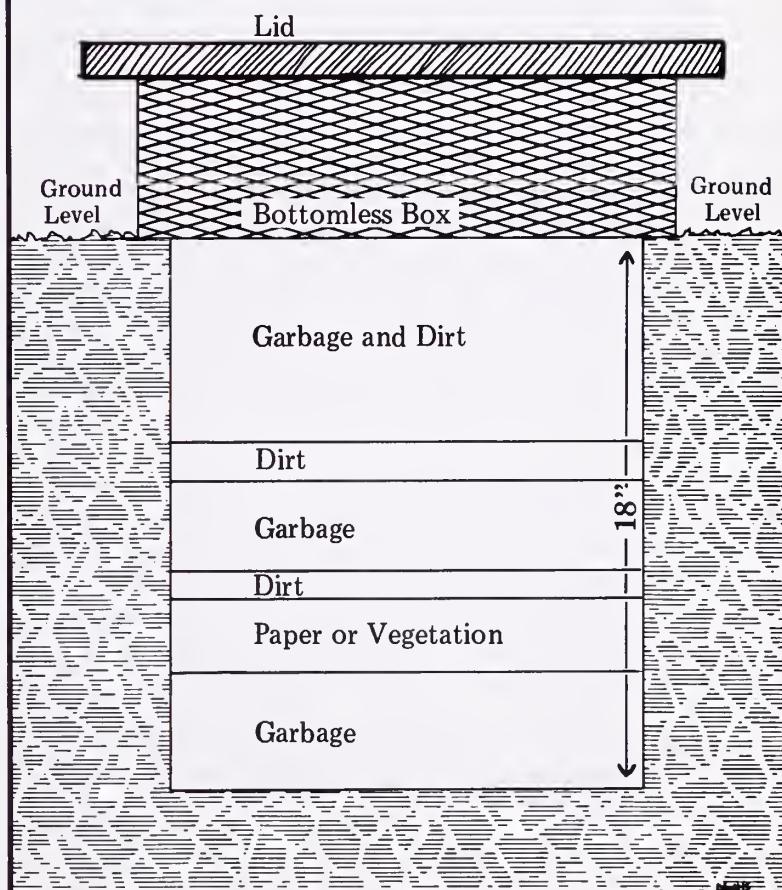
If your only interest in worm culture is to collect some worms and "hold" them until you go fishing, then a simple box will be sufficient.

For more information on culturing, harvesting, and marketing earthworms, the following publication is recommended: "Culture and Agricultural Importance of Earthworms" by R. C. Bal and L. L. Curry. Write to the Cooperative Extension Service, Michigan State University and ask for Extension Bulletin E-766.

BUILD YOUR OWN BAIT BOX

BY GORDON E. BURTNER

How about building your personal bait supply? The quickest way to construct your nightcrawler nest is to dig about an 18 inch hole in the ground. Over that place a bottomless apple box or some other container. The width of the hole depends on the size of the box, pail, can or whatever you're using. Dig the hole deep enough to protect the worms from extremes of heat or cold. Fit the box over the hole, and make a lid for it to discourage four-legged scavengers. Into the hole, throw all your kitchen wastes except grease and meat scraps. Alternately, layer this material with dirt and any other vegetable matter or paper refuse. Sprinkle the pile with water occasionally as you add more waste material. Don't worry about odors. The worms will prevent those. Except for the sight of the box, you won't know the pile is there. Leave the pit undisturbed for 90 days; or better yet, until Spring when the ground is warm and moist.





Conservationgram

VIRGINIA FROG MAKES THE BIG TIME. A long-legged bullfrog named Powhatan's Jug O' Rum was sent to California to compete in the Governor's Frog Jump event at the Calaveras County Fair and Jumping Frog Jubilee in May. The Virginia frog was bred and trained at the world famous Powhatan Plantation in King George County, which, in addition to jumping frogs, has produced such renowned national and international race horses and steeplechasers as English Derby winner Larkspur, Preakness and Mid-America Triple winner Tom Rolfe, and L'Escargot, winner of the Cheltenham Gold Cup Steeplechase, and the Grand National at Aintree. It is said to be the jumper L'Escargot, in particular, who gives Powhatan frogs their inspiration. Powhatan Plantation is owned by Raymond R. Guest, former Ambassador to Ireland, who also has served as a member of the Virginia Commission of Game and Inland Fisheries and as a Virginia State Senator.

GOODWIN CREEK GETS TROUT. Fish biologists have stocked Goodwin Creek, a tributary of the North Fork of the Rockfish River, with trout and the area will be open to public trout fishing. The two mile section of river begins at the confluence of Mill and Rodes Creek and ends one quarter mile downstream from Rte. 151 in Nelson County.

LOUISA GIRL WINS SAFETY MOTTO CONTEST. Miss Cheryl McGehee of Louisa was the winner in the Virginia Game Commission's Hunter Safety Motto Contest. Miss McGehee's motto "Safety Is A Trophy For Any Sportsman," was chosen from a large number of entries by a panel of sportsmen and conservationists. The prize for the winning motto this year is a handmade hunting knife produced by Richmond knifemaker Ben Shealor. The blade of this exceptional knife has been inscribed with Cheryl's name and motto.

CONSERVATION AND OUTDOOR WRITERS from all over the United States and Canada gathered in Virginia Beach on June 11 for the week-long conference of the Outdoor Writers Association of America. The several hundred writers, artists, television and movie producers met at the Cavalier Hotel and engaged in craft improvement programs, studied conservation problems and gathered material for articles on the outdoors in Virginia which will be appearing in newspapers and magazines throughout the country in the coming year.

VIRGINIA HAS NEW TROUT FISHING AREA. The Crooked Creek Fee Fishing Area in Carroll County is now open to anglers and will be regularly stocked with trout throughout the season which extends to Labor Day. On the Crooked Creek Area, anglers with a valid Virginia Fishing License can catch up to five trout per day with the payment of the \$1.00 daily fee. "Trout are stocked regularly in the stream and the activity offers a pleasant challenge with reasonable expectation of success," according to Jack M. Hoffman, Chief of the Game Commission's Fish Division. The Crooked Creek Fee Fishing Area is located near Woodlawn, Virginia and is the newest of three such areas. The other two fee fishing areas are Douthat Lake State Park in Bath County and Big Tumbling Creek on the Clinch Mountain Wildlife Management Area.

THE TREE SWALLOW

BY DANNY EBERT and DONALD FRANCIS

The fleet and graceful swallow seems to flit about effortlessly, spending most of his daylight hours on the wing. He appears to be playing as he moves through complicated maneuvers and daredevil acrobatics but he is really carrying on serious business. The swallow is actually hunting his chief food, flying insects, which are captured in midair.

The barn swallow, because of its bright coloration, wide distribution, and distinctive features, is generally the best known and easiest identified of the swallow family in Virginia. There is, however, another member of this family common to the piedmont and coastal regions of the state, the tree swallow (*Iridoprocene bicolor*).

The tree swallow is pure white underneath and has a brilliant bluishgreen back with dusky wings. Young birds are pure white underneath like their parents, but have a drab brown back. Female tree swallows are duller than males, having grayish or drab breasts. The feet and bills of these birds are shaded dark brown or black. Tree swallows are similar in size to barn swallows, but lack the deeply forked tail and pinkish or cinnamon buff underparts of the barnswallow.

Tree swallows prefer areas close by or adjacent to water or marshy areas, accounting for their distribution primarily in the coastal area of the state. Virginia is in a unique position when considering this small bird. The state lies near the extreme southern portion of the swallow's breeding range, and in the extreme northern portion of its winter range. For this reason, a few of these birds can be found here at any time of the year. Tree swallows reach their greatest abundance in the state during the spring and fall migrations. During March and April and again in September and October, large numbers of swallows can be seen traveling to their breeding or wintering grounds, consuming large numbers of harmful insects along the way.

Nesting activities usually occur in natural cavities, but these birds readily accept artificial nesting boxes as temporary homes for raising their young. The tree



swallow repays his landlord by consuming large numbers of insects while performing entertaining aerial antics. Nesting boxes also provide an opportunity to study nesting and parental behavior. Many times we have sat by a pond and observed male and female tree swallows flitting about the nesting boxes carrying on courtship activities. Occasionally one male may mate with two females, but since the male helps feed the young, problems may arise and some young may go hungry.

A normal clutch contains from four to six eggs. The eggs are white in color and average one-half inch in width by three-fourths inch in length. Four weeks is the usual length of time before the eggs hatch. The young are fed by both parents for about three weeks. The length of time the young spend in the nest can vary considerably, depending on the number of eggs laid and hatched, as well as the amount of food available to the young.

Since the swallows feed primarily on insects, ponds and marshy areas make ideal locations to place nesting boxes. The tremendous number of mosquitoes and other insects in these areas provide plenty of food for the swallows. Backyards are good places for nesting boxes also, since the tree swallow adapts readily to human activity much like his large cousin, the purple martin.

When placing nesting boxes around a pond, spacing them 75 to 100 feet apart is suitable. The boxes may also be distributed throughout any marshy or swampy area. Boxes can be placed on poles about nine feet above the ground. They need only be ten inches high by six inches wide and deep. The opening to the box should be small enough to prevent cowbirds and starlings from entering.

If tree swallows set up shop around a pond or yard nearby, then be prepared to sit back and enjoy their aerial antics, while at the same time benefiting from their appetite for harmful insect pests. The tree swallows are always welcome neighbors.

DAISIES OF VIRGINIA

BY BILL WEEKES

*O*f all wildflowers, the daisy brings the brightest touch to our hearts. It's a happy flower. It exudes optimism. It makes us feel good. Poets note the flower's simplicity. To William Cox Bennett, the daisy spoke eloquently as a sign of God's love and goodness on earth. To him, the daisy was "a smile of God."

The daisy is a friend. William Wordsworth tells us not to scorn even the humblest friend for he may render a small service even as "the daisy, by the shadow that it casts, protects the lingering dewdrop from the sun." Cy Warman depicted the daisy as a confidante: "Every daisy in the dell knows my secret, knows it well..."

The daisy is uplifting. Was not Stephen Foster's Jeanie with the light brown hair "as happy as the daisies that dance on her way?" The daisy is valued. "When you walk in a field," wrote James Stephens, "look down lest you tramp on a daisy's crown."

It is everlasting. "A rose has but a summer reign," James Montgomery penned. "The daisy never dies."

But the daisy is not so simple. Each blossom is not just one flower, but many flowers. In fact, the daisy represents the world's largest flowering family: the composite or daisy family. There are an estimated 15,000 species in this family, which is thought to be the most recent flowering family to appear on earth.

The daisy family includes most of our familiar weeds (dandelion, thistle, cocklebur, ragweed, hawkweed, tickseed, yarrow, burdock). Other well-known members of this family include the sunflower, plantain, aster, beggar-tick, wild lettuce, ragwort, goldenrod and coneflower.

The blossom of the daisy family bloom is characterized by clusters of many small flowers growing together into what is erroneously thought, by many, to be one flower. Each "petal" of the daisy is a flower in itself, a strap-shaped entity called a ray. At the same time the daisy has tube flowers growing out of its disk--the disk being the "black eye" of the black-eyed Susan, for an



*Tickseed (upper) is a member of the daisy family.
The ox-eye (lower) exemplifies the common idea of a daisy.*

example. The ray flowers and the disk flowers growing on the same individual comprises a composite of flowers, hence the other term used to label this family.

Basically an individual of the daisy family may have all flowers in a disk surrounded by a cluster of rays, as with the ox-eye Daisy, the aster, or the sunflower. Each flower, which produces seeds with various means of distribution, is supported by a small modified leaf called a bract. The bracts are bunched together into an involucre, which is found at the tip of the stem beneath the flower cluster.



During my years in Virginia, I tracked down, from spring to fall, various members of the daisy family. Two species--the plume like goldenrod and the crown beard--bear no resemblance to the daisy. One species of the yellow crown beard I came across in late September on the rolling cow fields of Montgomery County. This flower has from one to five rays and large spade like leaves. The plume like goldenrod is common to the low-lying fields adjacent to creeks outside Martinsville in September. The flowers of this species are very small, about one-eighth inch or less, and form a pyramidal cluster on the upper side of curving branches.

The chicory (*Cichorium intybus*), an alien to our land, I found scattered in lush bunches in the waste fields and road-

Goldenrod (above left), sunflowers (lower left), and asters (below) are all members of the large daisy family.

sides on the out skirts of the VPI & SU campus in Blacksburg in late summer and early fall. Although some varieties are white, the ones I observed were blue. In fact, this flower is also called the blue sailor. It is a stalkless flower, the rays square-tipped and fringed. It may grow to four feet and the blossom will close at mid-day.

Three yellow daisy-like flowers common to the fields of Henry and Franklin counties in May are the lance-shaped Coreopsis (or tickseed), the golden ragwort, and the chrysogonum.. The tickseed has eight rays with four deep lobes on the end of each, making the cluster seem to have more rays than it actually has. It stands one to two feet and grows in poor, sandy soils. The golden ragwort is a member of a huge genus, *Senecio*, which is composed of more than 1,000 species (characterized by flowers with flat disks that bear no scales and bracts that are aligned in one row). The golden ragwort bloom, with from eight to twelve rays, grows in clusters.

The chrysogonum is so prevalent to the Old Dominion that it bears the species name *virginianum*. Notable about this daisylke flower is its five rounded rays, long stalks, and heart or spade-shaped leaves.

Perhaps the most famous of all daisy family members is the black-eyed Susan, which I found in some fields one June in the mountains of western Virginia. The blossom, containing from ten to twenty rays, grows on one slender stem. Its characteristic "eye" is a protuberant chocolate-colored disk which forms the fruit and seeds.

Asters are also members of the daisy family--like the Late Purple Aster, which has 15 to 25 rays, which I found in a wooded ditch in my backyard in Martinsville one October; and the white, multi-rayed Rush Aster which is notable for its grass like leaves, and which is common to Henry County in September.



LIFE CYCLE OF THE HEARTWORM OF DOGS

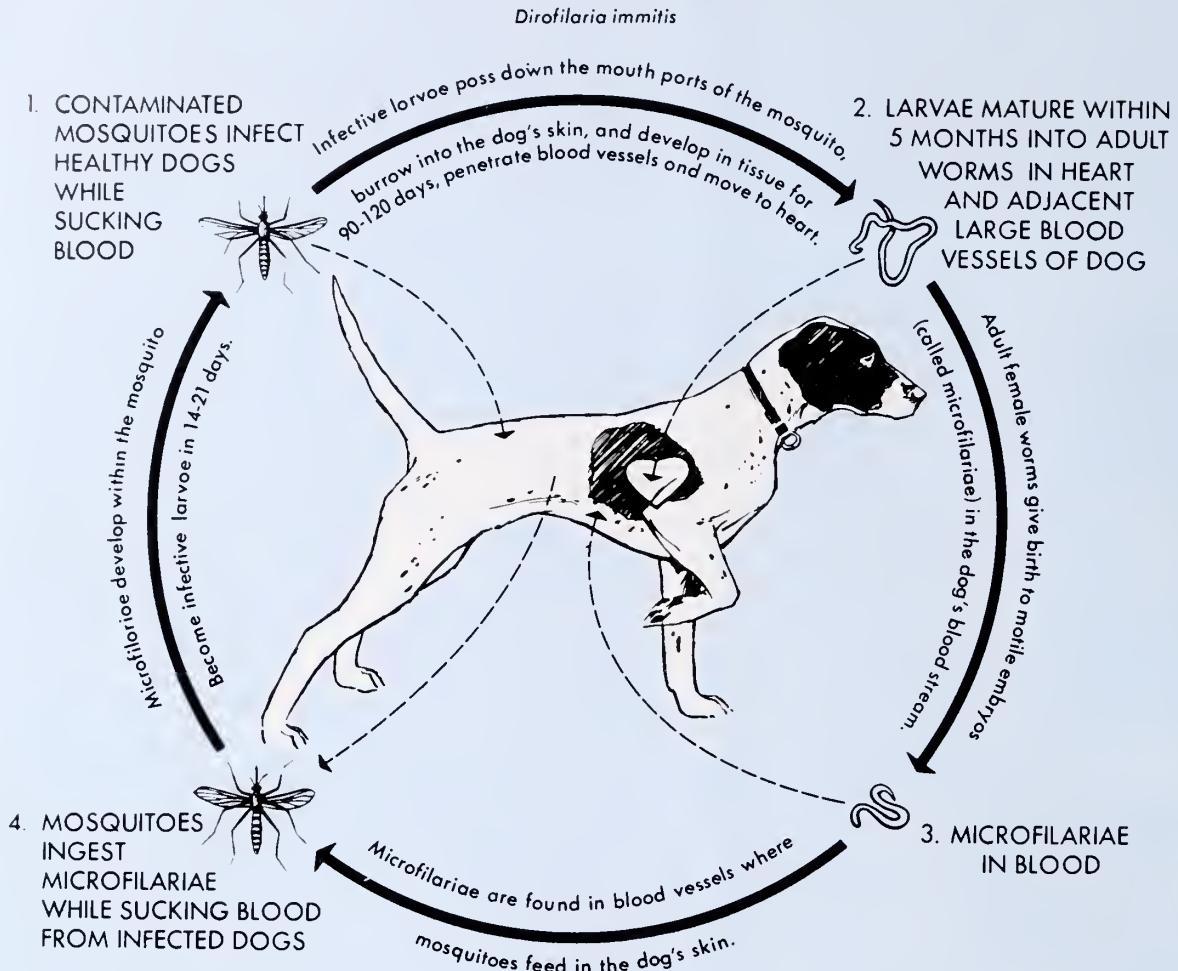


Illustration courtesy American Cyanamid Company

HEARTWORM



THIS PARASITE
IS A GROWING
MENACE TO
VIRGINIA'S DOG
POPULATION.
PREVENTION IS
THE KEY TO
CONTAINING THIS
DISEASE.

Serious sportsmen, whether hunting for waterfowl, small game, a prized buck or wild turkey employ man's best friend, the dog, to track and locate their quarry. The hunting dog, no matter what breed, is a companion, friend and obedient servant to the hunter. Since old Rover is so valuable when the hunting season comes around, he deserves the best care and treatment available. Proper food and annual checkups at a veterinary clinic should be a must for any prized animal. If the hunting dog is not properly cared for, disease may hinder his performance and shorten his life. A potential disease agent which commonly occurs in the Piedmont regions of Virginia and North Carolina is the dog heartworm, (*Dirofilaria immitis*). This worm, when transmitted to dogs by mosquitoes, can seriously affect and even kill a well trained and loved dog.

Adult heartworms are parasites of the right chambers of the heart and the pulmonary artery in dogs, foxes, coyotes and cats. Their young, called larvae or microfilariae, are found in the blood stream of the infected animal. This species of worm is world wide in distribution, being more abundant in moist warm climates where mosquitoes are abundant. In the United States, it occurs along the Coastal and Gulf states of the Southeast and is commonly found in the marshy areas of coastal North Carolina and Virginia.

The life cycle of the worm is complicated; understanding the cycle is important in providing control measures in hunting dogs. The adult worm as found in a hunting dog's heart are long, white and thread-like in appearance. Males measure 5 to 6 inches (12-16cm.) and females measure 10 to 12 inches (25-30cm.) in length with a spirally curved tail. The adult female worm releases larvae at her location in the right chambers of the dog's heart. They are carried through the lungs, and back to the left side of the heart and subsequently into the blood circulation throughout the body. It is interesting to note that the larvae migrate in large numbers at night, up to 50 times more in early evening than in daylight hours.

Common mosquitoes (*Culex*, *Anophles* and *Aedes*) suck blood from an infected dog at night and thereby pick up larvae. The young heartworm undergoes developmental changes within the mosquito in 10 to 14 days depending on the variety of mosquito and environmental temperature. Another dog acquires the infection when this infective larva is injected into the dog while the mosquito is feeding or emerges from the mosquito through hair follicles or intact tissue areas. During this time, they grow to about 1/10 th inch long. Some of these larvae may begin entering the heart 60 to 70 days after infection of the dog. Development to the adult stage in the heart chambers takes 174 to 233 days

as measured by appearance of new larvae in the animal's blood. The female worm's reproductive period exceeds 2 years and may last as long as 5 years. During this time a prized hunting dog may be severely weakened, if not killed by these large worms. Heartworm larvae may migrate across the placenta in the pregnant female and infect the developing pups. Therefore, breeding females who are parasitized may infect and damage their offspring.

In some cases, up to 25 worms in a dog may cause no discomfort or outward evidence of disease. The exact location of the worm in the dog's heart can determine the immediate damage. If one or more worms causes blockage of the heart valves or the valve to the pulmonary artery, the circulation in the dog's heart will be severely disrupted. Up to 60 worms will usually cause circulatory problems resulting in: loss of vigor, muscle weakness, roughness and loss of sheen in the coat, coughing, difficulty in breathing, etc. Dogs harboring 100 or more worms usually have enlargement of the heart caused by blockage of blood flow in the incoming veins and outgoing arteries. Increase in blood pressure may damage the liver and kidneys and cause congestive disease in almost any body organ.

How can you determine if your hunting dog has heartworm? The dog while hunting may tire easily, may lie down and gasp for breath and even lose consciousness. Rapid tiring is one of the earliest signs. Excessive appetite, decided anemia, coughing, fixed vision, depression, nervousness or convulsions are also signs that the dog may be infected.

Treatment usually consists of obtaining a brief life history of the animal to determine if it comes from a geographic area where heartworm is usually found. Urine analysis is made and blood calcium levels are determined. Injection into the bloodstream of the drug Aresenamide twice a day for 2 days is a common treatment to eliminate adult worms. Following this treatment the dog should have very restricted physical activity because the drug kills the worms and pieces of them may be swept through the circulation and block valves or vessels in the lungs or brain. Their blockage usually causes heart attacks or stroke-like symptoms. It is not uncommon for a dog to die from these problems some days or weeks after treatment. Another drug, Diethylcarbamazine, can be added to the dog's food in very small quantities. This prevents any larva injected by mosquitoes into the dog from maturing. Diethylcarbamazine can cause shock-like reactions in the dog that already has adult worms and circulating larvae. With the exception of drug prophylaxis, prevention of heartworm in dogs usually requires removal of the animals from the heartworm area or prevention of dog/mosquito contact. This technique is usually not possible. In a few rare cases, dog heartworm larvae have been found in the circulatory system of man.



Glenn Frum of the Virginia Wildlife Foundation presents Governor John Dalton with print number one of a special limited edition wildlife series. The winter scene of a whitetail buck and doe was done by nationally known artist Ed Bierly. It appeared on the cover of National Wildlife magazine. The Virginia Wildlife Foundation plans to offer the prints in a campaign to raise funds for worthy conservation projects. The Foundation has already helped fund 4-H educational projects and the development of ecology oriented slide programs. Mrs. Dalton reportedly has plans for hanging the new print in the Executive Mansion.

F. N. SATTERLEE PHOTO

Guan Again

Dear Virginia Wildlife:

I was interested to read about the guan in your April Kaleidoscope.

Near the end of January, while on a trip to Costa Rica, I made an excursion to view Costa Rica's highest volcano, Irazu, and on the way up to the summit at about 10,000 ft. elevation, saw a large white-winged bird fly from

one large copey oak tree to a flowery flame tree on which I understand these birds feed on a variety of flowers, leaf buds and small fruits. Not being familiar with these species of Central American birds, I wasn't able to find out anything about them.

Two days later, while on the jungle train to Port Limon on the Atlantic Ocean, we saw another white-winged bird fly by. To make a long story short,

after I got back to the house, I read an article in a publication about the endangered birds of the world and a description of the white-winged guan last seen in the wild in 1877 and recently sighted by Dr. John O'Neil, an ornithologist at Louisiana State University, and one Senor Gustavo del Solar, of Peru. I have since written Dr. O'Neil about these sightings and hopefully someone in Costa Rica can substantiate

EASY MEAL

The balance of nature, while sometimes harsh, must be understood and accepted by anyone interested in learning more about the natural world.

As a result of the fields being covered with snow for several weeks, hawks have been seen near bird feeders in search of an "easy meal." This, in turn, causes folks to wonder if they have done the right thing by luring birds to come to their yards, then to become targets for birds of prey.

Before we judge the hawks too severely, we must consider that their diet consists of rodents, large insects, small mammals, reptiles and birds. Much of their food is inaccessible as small animals tunnel under the snow, safe for awhile from the predators.

Hawks and owls are an important link in the ecological chain. They are protected by state and federal laws. ➡ ➡ ➡ ➡ ➡ ➡ ➡

their habitat and expedite their protection. Also in this same area are found the famed quetzal birds of the Montezuma era of the Aztec Indians. The article was of great interest to me as one who is a Naturalist by heart and being a member of the Virginia Forestry Association of Richmond. I am always on the lookout for unusual trees, birds, and rare plants.

Richard Salzer

Canoe U

Canoe U opened in April as Virginia's newest school of canoeing. Students at Frederick Campus of Tidewater Community College learned basic paddling, canoe camping, float fishing, trip planning, river conservation and a dozen other related skills.

During the summer, Canoe U's touring pros will teach at colleges, country clubs, and for various recreation groups in the tidewater area. The traveling canoe

school was developed by R. E. B. Stewart who is one of Virginia's most avid canoe enthusiasts. According to Stewart, his instructors are highly qualified and they have enough equipment to instruct thousands of paddlers each summer. Next year Canoe U plans to franchise its schools nationally. For more information on Canoe U write to P. O. Box 6055, Crittenden Station, Suffolk, Virginia 23433.



In typical rationalization, we hope that if a hawk picks off a bird at our feeders it should be a starling, house sparrow or cowbird, not one of our beautiful song birds.

It is our nature to be more concerned about the death of a robin than that of the earthworm, equally alive, but eaten by the robin.

We don't mourn the loss of a cicada that provided a meal for a scarlet tanager, but we turn away from the thought of a larger bird doing away with the tanager.

Hawks most often report-

-YuLee Larner, reprinted from the Staunton News Leader

ed at feeders are the sharp-shinned, Cooper's and American kestrel (sparrow hawk).

In one week, I watched two kestrels, one in a city yard and the other along a country road. Their sharp beaks and talons struck quickly. In one instance the target was a cowbird, in the other it was a starling. (Yes, I was glad they were not cardinals.)

While it was a bit gory, I was fascinated to watch this natural, instinctive act of survival.



Dr. James R. Knight, Jr., (R) Game Commission Vice-Chairman, presents a turkey picture to Joe Collins, Manager of Virginia Woodlands for WESTVACO in recognition of the Company's habitat improvement program. Collins accepted the Wild Turkey Federation's "Habitat Award" at the annual banquet of the W.T.F.

Prints of this deer painting featured in the December, 1977, Virginia Wildlife Magazine are available through Jane Partin, 8301 Graves Road, Petersburg, Virginia 23803 for \$10.00.



Water skiing is a team sport

Water skiing is a three person team sport. Without teamwork everyone loses. It is one of the fastest growing sports in the nation. The skier can find fun any place where skiing is allowed. The skipper must see that all skiing is done safely.

The skipper should have an observer to pass the skier's signals. There should be two people in the boat. The observer watches the tow rope, the skier and the boat's wake. In Virginia, it is unlawful to tow a person on water skis unless there is a person in addition to the operator on board, or the skier is wearing a PFD.

Remember the law requires an approved PFD on board for all passengers including the skier.

The boat should start at a slow speed until the tow rope is tight. Check that the skier is wearing a life preserver. Ski belts are not Coast Guard approved PFD's. Once the rope is tight and the skier is ready, be sure the way ahead is clear of traffic. When it is, apply enough power to raise the skier. Steer a course away from shore and danger spots and go directly into the water skiing area. When the skier is up and skiing, the power should be eased off as signaled by the skier.

The boat should not make sharp turns. This causes the skier to fight the wake of the boat and it is very dangerous. Fast, sharp turns can also cause the skier to lose speed and sink. Each turn should be a large one, keeping the skier inside the wake of the boat.

Stay a safe and reasonable distance from all docks, swimmers, fishermen and danger areas. The tow rope should be at least 75 feet long. Keep the skier at least double that distance away from all potential hazards.

Give all other boats plenty of room. Maneuvering is difficult while towing. Use and obey the rules of the road with extra care and judgment.

When a skier has fallen, circle slowly back to and around him. This will get the tow line to him. He can use it to get up again or to pull himself to the boat for boarding. To bring him aboard, stop the motor. Let him aboard at the bow or stern, whichever is safest for him and the boat. Once the skier is aboard, retrieve the skis and any other equipment.

Water skiing is a sport. It takes skill, not showing off, to become a good skier. Horseplay brings with it danger to the boat, the skier and anyone in the area. Showing off is the chief cause of accidents in what could be the safest water sport.

Give the skier a smooth, easy ride and let him signal what he wants to do. He cannot operate the boat, but he should always be able to control it. The skier knows how much he can and wants to do. Do not try to do his

thinking for him. Give him all the help possible.

Learn the basic water skiing signals. Teach them to a skier before he goes out and the fun will double for every member of the team - driver, observer and skier.

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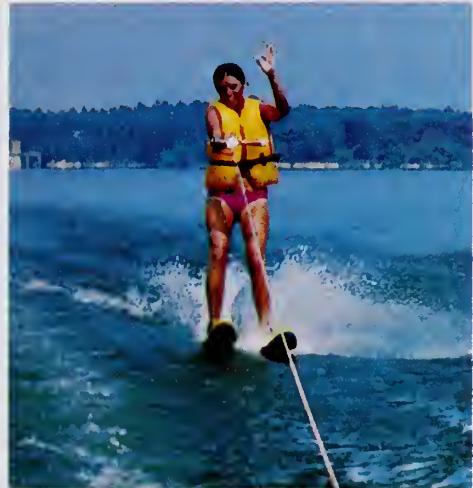
Stay a safe and reasonable distance from all docks, swimmers, fishermen and danger areas. The tow rope should be at least 75 feet long. Keep the skier at least double that distance away from all potential hazards. This protects him from danger to himself and to others.

Learn the basic water skiing signals. Teach them to a skier before he goes out and the fun will double for every member of the team - driver, observer and skier.

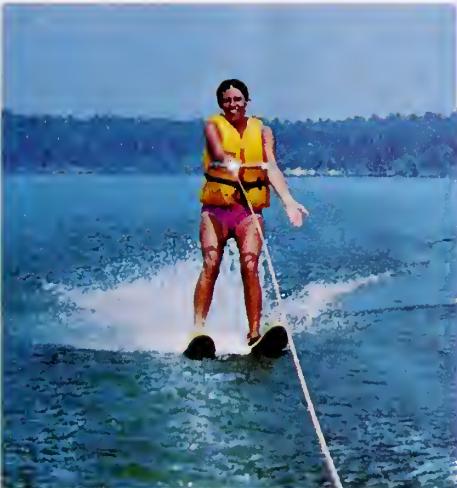


VIRGINIA WILDLIFE

WATER SKIING SIGNALS



SPEED OK



FASTER



SLOWER



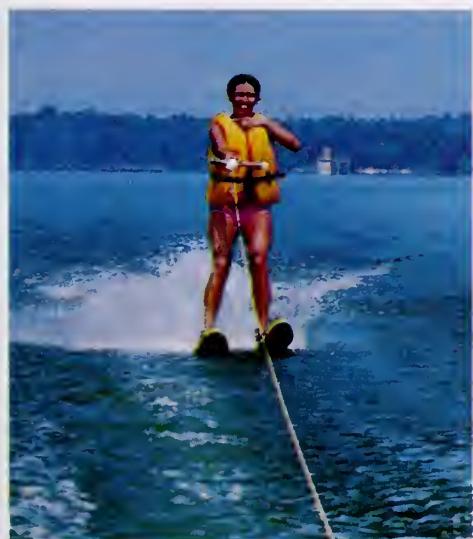
TURN LEFT



TURN RIGHT



BACK TO DOCK



CUT MOTOR STOP



FALLEN SKIER WATCH OUT



OK

A MIXED BAG

A VACATION IN COLONIAL WILLIAMSBURG OFFERS MORE THAN JUST HISTORY. THE AREA SPORTS EXCELLENT BLUEFISHING AND CRABBING, AS A CALIFORNIAN DISCOVERED ON A RECENT TRIP.



BY KAREN GREEN

When invited to spend a holiday weekend with friends who live a few minutes outside Colonial Williamsburg, I cheered. Having just completed a strenuous Appalachian Trail backpack trek (see VIRGINIA WILDLIFE March, 1978), I welcomed the prospect of three days of rest. Little did I know that my vacation would be packed with fishing for the two blues.

Already famous for its early Americana tourist spots, I found that C. W. deserves to be circled on every sportsman's map as one of the Atlantic Coast's top outdoor havens.

In the early mornings, I joined my hosts, Art and Joan Cone, at Queen's Lake while they checked their crab traps. Each day, we'd haul up a handsome supply of luscious blue hard-shells. After we replaced the bait in the mouth of the wiry cage and lowered it into the waters off their boat's dockside, we would hurry back to their kitchen to cook our catch for the evening meal's appetizer. Soon after that, we'd be ready to take off for an afternoon of saltwater fishing. Being an ardent Pacific Coast albacore fisherman, bluefish was my kind of sporting game.

With the high tide outgoing, a favorable water temperature of 68 degrees, and overcast skies preventing our shadows from alarming the fish, everything seemed to be on our side. We began to anticipate several hours of exciting action.

Only one hour after leaving dock, we had followed the mouth of the York River into the Chesapeake and were ready to fish. Carefully, we watched our trolling rods, as the slightest bend might mean a fish had taken the lure and was swimming along behind the boat. Crocodiles, alou eels and other dark lures seemed to be favored baits for our fishing conditions. Every few minutes, one of us would feel a sudden sharp pull on our rig and we'd be set for a playful bout of tug of war as a 9-pound blue would cleverly leap and dive in his fight to get loose -- hoping, all the time, that we would be the winners.

When it was time to return to shore, our count was 13 hook-ups, 7 boarded -- not bad for only two hours. Although we lost several beauties, we had experienced the great joy of fishing and knew those blues were still out there for us to catch another day.

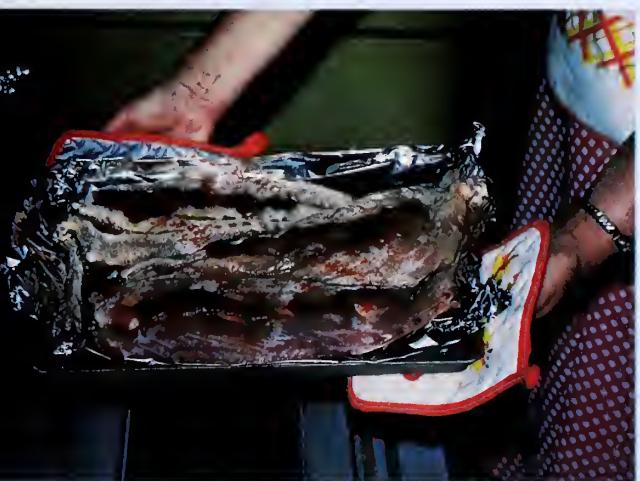
Back at dock, we dressed our supply and returned to the kitchen to complete the last details for our fisherman's feast.

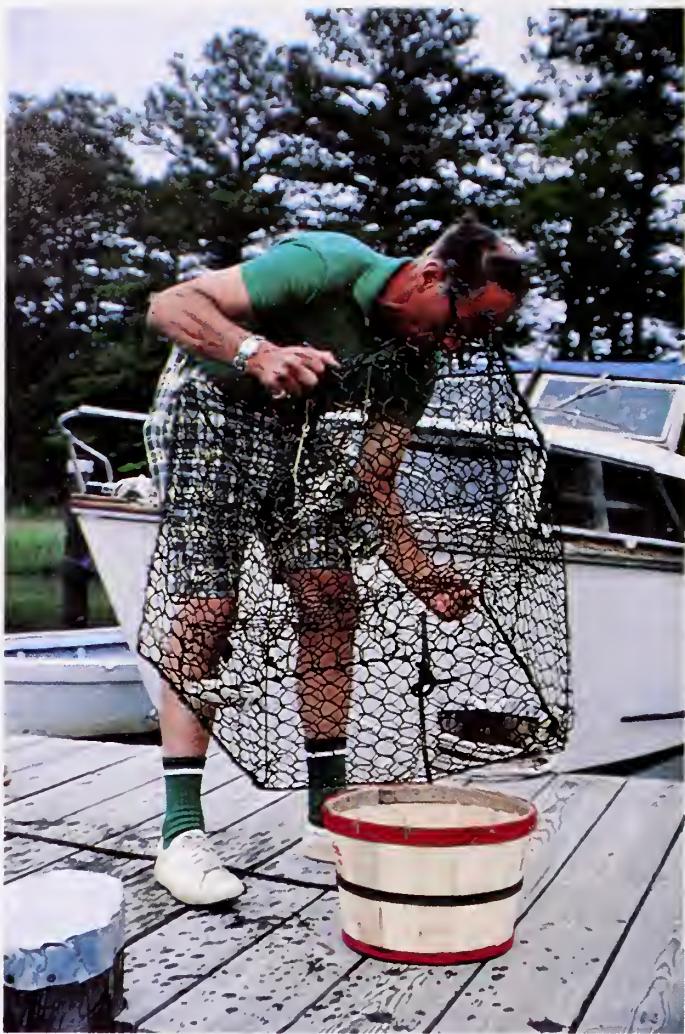
To prepare your two blues -- crabs and bluefish -- for a tasty addition to your mealtime repertoire, simply follow these instructions and photographs:

BOILED CRABS

Using tongs, carefully place the crabs in a pot of boiling water to which you have added 1/2 teaspoon of salt per fish. Cook about 10 minutes per pound, or until the crab aprons begin to rise in about 20 minutes. Do

Author Karen Green (above) catches her first bluefish. This dish (below) would have been fit for a colonial dinner party.





Art Cone checking his crab traps. The reward is a tasty meal.

not overcook. Remove crabs, drain, and allow to cool before eating or freezing.

To eat properly, you will need a nutcracker and set of picks (or special crab cracking equipment). Turn each crab on its back and break off the legs close to the main part of the body. Use the picks to help remove the meat from the claws, or just suck out this sweet meat with your mouth. After enjoying the legs, lift up the triangular portion of the shell and remove the main shell to attain the body meat. Discard the spongy gills and the mustard-green fat; use your picks to extract the meat. Save leftover meat to garnish another dish or, if you have a quantity, to feature in the following casserole:

CRAB NOODLE KLAGES

12 ounces noodles, cooked and drained

1 pound of crab meat pieces

1 8-ounce can tomato sauce

1 13-ounce package cream cheese, broken into pieces

Preheat oven to 350 degrees. Toss noodles in a bowl with the crab meat. In another bowl, blend together the tomato sauce and cream cheese. Place noodle-crab mixture on well-oiled shells or in a well-oiled 3-quart casserole. Top with tomato sauce-cream cheese. Bake in the

preheated oven for 20 to 25 minutes. (Cooking time for individual shells will be less than for casserole.) Serves 4 to 6. (Note: Preceding recipe from **THE GREAT INTERNATIONAL NOODLE EXPERIENCE**, by Karen Green, Atheneum Publishers, New York.)

PREPARATION OF BLUEFISH

Fully dress and fillet bluefish, removing all skin and dark red meat, which is the oily, gamy tasting section. An electric knife will assist in this process. To freeze, wrap each fillet in foil and label with a marking pen, the fish, date, and serving portion.

To cook bluefish, select a recipe that is ideal for a fatty fish. When fresh, it is especially delicious seasoned with salt and pepper (you might also add some herbs and white wine) and broiled for about 5 minutes on each side, depending upon thickness. For additional flavor, spread one tablespoon of your favorite barbecue sauce over the fillets before broiling the fish on its second side.

To easily bake bluefish, place several fillets on a lightly oiled oven-proof dish. Top each fillet with cooked crab meat (to your benefit, you will have saved some leftovers), a sprig of fresh herbs (such as rosemary, thyme, or parsley), salt and pepper, and then another fillet of bluefish. Dot each double fillet with butter, a splash of white wine and salt and pepper. To determine cooking time, measure one of the thicker fillets and double it, then allow for 10 minutes per inch in a 425 degree oven. Serve with lemon wedges.

A lovely dish of bluefish and vegetables can be quickly assembled for you to share with your family and friends. Any leftovers are excellent for lunch the following day:

BLUEFISH PARTY STYLE

1 large onion, sliced into thin rings

4 bluefish fillets (approximately $\frac{1}{2}$ pound each)

1 15-ounce can stewed tomatoes

1 6-ounce can pitted black olives, drained and sliced

$\frac{1}{4}$ cup finely chopped fresh parsley

1 teaspoon toasted onion flakes

salt, pepper and garlic powder to taste

juice of 1 lemon

$\frac{1}{4}$ to $\frac{1}{2}$ cup white wine

1 tablespoon of cooking oil or melted butter

Prepare a large oven-to-table casserole with no-calorie spray. Place onions on bottom of the dish and top with fillets. Pour stewed tomatoes around fish and scatter olives and parsley all over fish and tomatoes. Sprinkle onion flakes, salt, pepper, garlic powder and lemon juice over fish. Pour wine around fish on top of vegetables. Drizzle oil or butter over fish. Cover casserole and bake in a 425 degree oven for 20 minutes, or until fish begins to flake when tested with a fork. Uncover and serve immediately. Steamed white rice is an excellent accompaniment for the vegetables and fish juices. Serves 4 to 6.

Roughfish

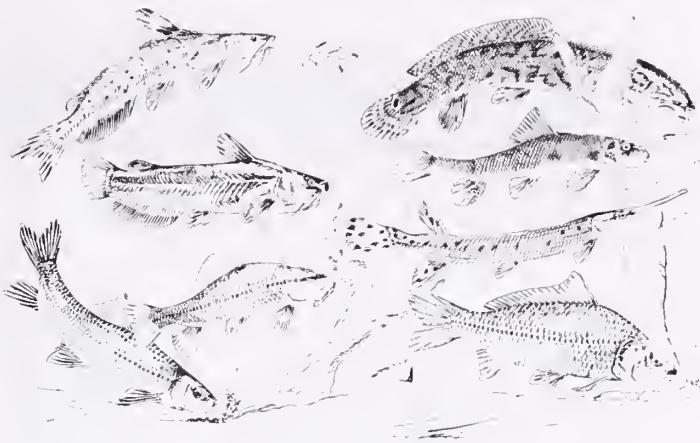
BY RICHARD HARDY

This fisherman is getting tired of hearing the "purists" downgrade the fish which are classified as "roughfish." This group includes carp, suckers, catfish, fallfish and any other fish which does not come under the coveted title of gamefish.

Now it is easy to see that a trout is indeed an admirable fighter and a beautiful fish. When you think of trout, you immediately think of meandering streams, fancy hand-tied flies, and a scientific fisherman with all the trimmings. This would include a genuine Orvis Battenkill bamboo flyrod, and microscopic tippets which look like they were freshly spun by a spider the night before. The true fly fisherman has a vest filled with everything from a "match the hatch" fly tying kit to insect repellent. He would have to be classified as the ultimate of the freshwater fishing world. Now, this is all well and good, but some of us just do not have the money to get involved, even though we would love to.

The same is true when the "roughfish" are compared to the largemouth and smallmouth bass. Sure, they cannot compete with them on even ground, but that is still no reason to downgrade a fish, or place an unearned title upon it. A carp will never cause a national trend such as high speed boats with all the new scientific instruments, but I still would like to see at least good sportsmanship shown to all fish.

I was fishing the North Fork of the Shenandoah near the town of Woodstock and encountered what I expect is a common sight. It was a very cold dismal day in March and I had decided just to get out and see if I could catch a fish. I was fishing from the bank as the water was just too cold to put on my usual waders. While fishing was very slow, it was indeed nice just to be outside in the arms of Mother Nature. After a few casts, another person came by to fish also. We talked about the river and fishing, and he lazily tossed his lure out into the slow-moving current. On his third cast, his rod bent nearly double and the old Mitchell 300 began screaming like a new-born babe as the fish headed for deeper water and swifter current. We were both almost sure he had hooked one of those savage Shenandoah smallmouths and he was in for the thrill of his life. There were a couple of real good runs as the fish pulled line out and this man would again gain line as the fish weakened. It was very exciting to watch and the only thing which would have made it better was for the fish to be on my line. There were a couple of small jumps, but we could only tell it was a good-sized fish. I could almost see the excitement mounting as the angler and the fish struggled to the final moment. All I could see



was a large bronze flash as he darted to the surface and then under again. He finally wore the fish down, and I could see the anticipation as he reeled in the tired creature. The smile on his face was a proud one, as he had won a good battle against a pretty darn good fighting fish. I took a good look as it came closer and saw the large gold-and-silver scales shining in the sunlight that was beginning to break through the cloud cover of the day. It was a fallfish and must have weighed at least 4 pounds.

The man cursed loudly and ripped half the fish's insides as he removed the treble hook. Now I know all about the disappointment of not getting a citation bass because I have lost some good ones myself. But this fish had fought a good fight and he could not tell until the last minute that it was a roughfish. The fish wiggled a little as he slammed it back into the river and I noticed it was bottom-up as it floated downstream. The man was still complaining as he left to get into his car.

The fish had given the man a thrill which he could not have gotten had he been at home. He had also had a chance to get out in the wild and enjoy the solitude of being away from the rat race. Few people can even do this any more, especially with a five-minute drive. Sure, the fallfish may take food away from the bass and trout, but that is the survival of nature and has been going on since the beginning of time. It is not the fish, but a human problem.

Since this happened, I have caught many fallfish in the chilly months of February and March and enjoyed every minute of it. On light tackle such as 4-pound test and an ultralight rod and reel, they have given me some good times. Also they are not that bad on a popper and a flyrod either. They do bite when others will not, and this keeps a fisherman happy.

If there were no trout, bass or other gamefish, then there would be many purists fishing for roughfish. Stories would grow and legends would be formed, and opinions would change quickly.

Many people will probably laugh at this article, but while they are laughing, I will be catching some fish rather than having to read about it. And even if it is a fallfish, I will be thankful for the fight and the chance to roam the great outdoors.

Personalities

Text and Photo by Francis N. Satterlee

JAMES T. O'HARE

Jeannette, Pennsylvania, a community of some 20,000 population, was Jim O'Hare's birthplace; and he grew up learning about the outdoors and fishing as he roamed the fields and streams in the countryside northeast of Pittsburgh. Summers and after school, Jim worked at a variety of jobs which were typical of teenage employment.

He enlisted in the United States Army following his graduation from Jeannette High School and was assigned to the Army Security Agency. After two years of specialized schooling Jim was sent to Africa where he was to serve in the Ethiopian Province of Eritrea. He later was assigned to Germany, Arabia, Egypt and Italy.

In 1956 O'Hare returned to the United States, was discharged from the Army and entered Penn State University where he majored in Forestry. He received a B.S. degree from that institution in 1961 and shortly thereafter accepted a job with the Virginia State Division of Forestry. With that organization he worked in basic reforestation, fire control and timberland management in Virginia's Shenandoah Valley.

O'Hare transferred to the Commission of Game and Inland Fisheries in 1975 to fill the position of Assistant Land Coordinator, working with James W. Engle, Jr. Commensurate with the creation of a new division within the Commission structure, that of Lands and Engineering, Jim Engle became the Chief. This, in turn, created an opening for the position of Land Coordinator which Engle had previously filled.

Jim O'Hare competed for the position of and was chosen to be the new Land Coordinator effective April 1, 1978. In this capacity, he is responsible for the acquisition and legal aspects of land purchases and related activities pertaining to lands managed by both the Fish and Game Divisions.

Jim makes his home in Staunton, Virginia, closely adjacent to his office in a part of the Commission's building in that city. He especially enjoys working outdoors and meeting the challenge of working on projects which are state-wide in nature and being able to work with the sportsmen of the Commonwealth.



Growing Up Outdoors

By Sandy Coleman

THE SQUIRREL HOUSE

Matt and Amy ran down the steps and out into their yard. Rover, their Siamese kitten, followed closely behind them.

"What you want to do today, Amy?" Matt asked as the three came to a halt beside the cherry tree.

"Oh, I don't know. Don't you have any ideas? I think it would be neat to do something that we have never done before. Why don't we take some pictures?" his little sister answered.

"No, I don't want to do that. Besides, I don't have any film. What about going fishing?" Matt thought that sounded like a particularly good idea for the hot summer day.

"I have an idea," Amy said excitedly. "Why don't we built a squirrel house? That way we could watch the squirrels like we did the baby robins before. Maybe we could even teach the squirrels to eat out of our hand. I have seen them do that on television, you know," Amy said, proud that she was able to come up with an idea that her older brother would agree to.

"Okay, that sounds pretty good. Where do we start? We can't just nail boards together. We have to come up with a plan," Matt said thoughtfully. "Let's go to the library and find a book that will tell us what we ought to do." Soon the brother and sister were hurrying along to the library.

By reading and by talking to their father, Matt and Amy soon came up with a plan for building their squirrel house. They also learned several interesting things about squirrels in the process, such as the fact that squirrels frequently forget where they have buried their food. Consequently, the nuts they have buried



Illustration by Diane Grant

soon grow into trees. That, Matt thought, was surely one of the most important things about them.

The two also learned that it would be wrong to attempt to teach the squirrels to eat out of their hands. There was a danger of biting, Matt and Amy read.

"I'm sure glad we didn't try to do that," Amy said as she watched Rover knocking the crumpled-up ball of paper around the floor. "That would have hurt!" Matt nodded thankfully in agreement.

Matt and Amy's squirrel house soon became the center of attention of all the children in the neighborhood. The house, square-shaped with an opening wide enough for several squirrels to get through at one time, was placed on the fork of a branch of an oak tree standing in their back yard.

Matt, who loved to take pictures of wildlife with his camera, soon found that the squirrel house was the perfect place to take some wonderful photographs. He was particularly

proud of several that he had taken of the squirrels eating some of the nuts that the two had left there for their furry friends.

Matt and Amy soon developed several places where they regularly left food for the squirrels. Soon, it became obvious that the squirrels looked every day in the same place for their daily ration of nuts and peanut butter.

Rover was also very interested in the children's new friends. Amy and Matt were afraid that she would begin to chase them, but the kitten seemed to understand that Amy did not want her to do this. Rover, being unusually cooperative, obediently left the squirrels alone.

"You know, Amy," Matt said thoughtfully. "This sure has been a lot of fun, you know. Being able to watch the squirrels closely has really been exciting. I wonder why more people don't do this?"

Amy looked at Matt and agreed. "I guess they just don't know what they're missing."

IT APPEARS TO ME BY CURLY

...A PERSON OUGHT TO HAVE ONE

The way things are going, energy matters of all flavors seem to be capturing the fancy of the majority of us and that's good I reckon. Seems as though more and more folks are seeking different ways to save energy and money at the same time. Along those lines, some of our neighbors are trying to help. For example, the people at your local Bryant Heating and Cooling contractors have a free booklet which they will be glad to share with you. Ask them for "*The Great Indoors Handbook or How to Get More Energy For Your Money*".

During WWII there was a popular slogan which urged Americans to "Care for your car for your Country." This sound advice was based on the fact that no replacements would be forthcoming for the duration. Along these same sound lines a current campaign suggests that the most important machine we own, our heart, also needs tender loving care. The American Heart Association has a free survival kit which tells what to do if you, a member of your family or your neighbor has a heart attack. The first actions taken are often the most important. Consult your phone book for the address of your local Heart Association and ask them to send you a copy.

"Food Is More Than Just Something To Eat" is the title of a free booklet published by the Department of Health Education and Welfare. If you are interested in eating the correct foods, want to learn about improving your figure at the



same time and have a spare stamp, request the publication from Nutrition, Pueblo, Colorado 81009.

Attention Bikers! There is a fairly new newsletter called "*Bike News*" which just might come in handy in your planning process. Write to the Central Transportation Planning Staff, 27 School Street, Boston, Maine 02108.

And for you joggers...the President's Council on Physical Fitness and Health and the National Jogging Association have jointly recommended a free booklet entitled "Successful Jogging". In the publication are explanations of the various aspects of physical fitness and jogging. Request the booklet from the Consumers' Information Center, Dept. 641-E, Pueblo, Colorado 81009.

....FOR YOUR BOOKSHELF

If you have a spare quarter and are the owner of, or have access to, a microwave oven and are interested in successfully using it to cook fish and game...you are in luck. The Whirlpool Corporation has produced a 16 pager which contains 51 recipes and some interesting tips about defrost-

ing with and the general use of these ovens. The recipes came from none other than Virginia's own Joan Cone and Karen Green, both of whom are well known devotees of outdoor cooking and hunting. To get a copy of this dandy send 25 cents in coin or mail a check payable to Whirlpool Corporation, Whirlpool Corp. Fish & Game Recipes, Administrative Center, Benton Harbor, Michigan 49022.

Maggie Nichols is Assistant Managing (and first woman) Editor of Field and Stream Magazine, a trail breaker with a great track record and now, bless her heart, she has written a book with the intriguing title, "*Wild, Wild Woman*". Oh, it's not what you think...instead it is a delightfully written practical package of advice, encouragement and detail which will entice you gals into the wonderful world of the great outdoors. It is obvious that Maggie has had, and continues to have, an affair with and is hopelessly in love with things wild. By Berkeley Publishing Corporation, 200 Madison Avenue, New York, New York, 10016, *Wild, Wild Woman* costs \$4.95.

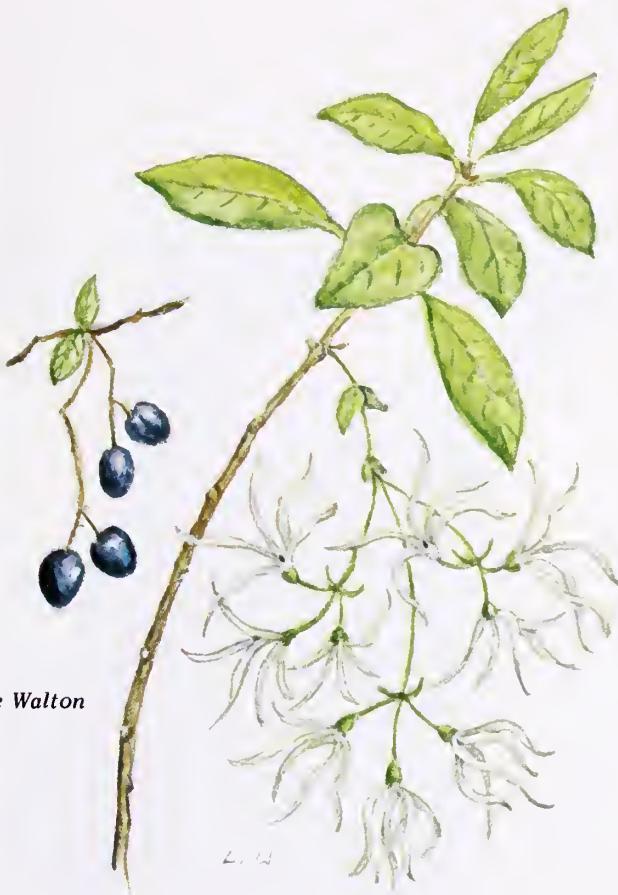
.....AND THEN

The Royal Bank of Canada had a nice bit of philosophy in one of their recent newsletters that went as follows: "Wise use of our limited resources means restrain of the few persons who through ignorance, folly or greed try to satisfy their desires at the expense of all the others."

"In Natures Garden"

THE FRINGE TREE

Illustration by Lucile Walton



BY ELIZABETH MURRAY

There are some unexpected bedfellows in the olive family (*Oleaceae*). In our yards we have lilac, jas- mine and forsythia, while out in the woods there are the ash trees, privets, devilwood or wild olive and the fringe tree, *Chionanthus virginicus*, whose only other generic relation lives in China.

Chionanthus is a small tree, not more than thirty feet high, and sometimes is only a shrub with no main trunk. The leaves are deciduous, opposite and narrowly oval, four to eight inches long, with the hairs on the lower surfaces following the pattern of the veins. The white flowers hang in graceful, drooping panicles from the axils of the leaves. Petals are united just at the base, but beyond this are divided into narrow, strap-like lobes which, of course, give the plant the name "fringe". There are two tiny stamens and a small notched stigma. Only some of the flowers are slightly fragrant with a light sweet scent. The fruit is a fleshy oval drupe, deep purple with a whitish "bloom".

Fringe trees like damp locations and do not necessarily shun high places. They grow in moist woods, thickets or bluffs and have been found at altitudes up to 4,000 feet. They are primarily southern plants, ranging from Florida to New Jersey and eastern Pennsylvania, but they are frequently cultivated further north and are extending their range northwards by escaping from cultivation and prospering in the wild in their new locations.

The name *Chionanthus* comes from the greek word *chion* meaning "snow" and *anthos* meaning "flower".

The fringe tree has a number of other common names, as confusing as common names usually are. It is known as flowering ash, which is understandable since they belong to the same family, but also old man's beard, which is usually reserved for some of the species of *Clematis*, graybeard tree, poison ash, shavings, snowdrop tree and snow flowers.

Preparations of the bark yield a medicinal preparation which has been used as a tonic, diuretic and astringent, and is also supposed to be effective in reducing fever. In Appalachia, a liquid of boiled bark is applied to skin irritations. So, by repute, fringe tree medicine seems to cure a little bit of most anything!

Virginia puts on a wonderful spring for us at many levels of the plant kingdom, but she is perhaps at her best when dressing out the shrubs. In England, the best of the spring is found in the little early perennial wild-flowers, but the newcomer to Virginia must surely be most impressed by the tremendous variety, profusion and showiness of the flowering shrubs and small trees. Chasing away winter very early in the year comes the shadblush, closely followed (occasionally preceded) by redbud and the dogwoods. Then spring races on through the flowering cherries and crab apples, sweet-shrub, the magnolias, all the azaleas, rhododendrons and other members of the heath family, until in May we can find the fringe tree blooming, along with viburnums, yellowwood, hydrangeas and all the other shrubs and small trees of early summer.



2010
Prothonotary
warbler
885-1198
Loyola

JOHN W. TAYLOR

Bird of the Month

Prothonotary Warbler

BY JOHN W. TAYLOR

Despite its abundance and fairly wide distribution, the prothonotary was, to early ornithologists, a bird of mystery. Little was known of its haunts or its life history. At the time of Nuttall, in the early part of the 1800's, it did not even have a common name! In his book, it is listed as the *Protonotary vermicivora*, an attempt to anglicize the scientific name.

Audubon sought for it in Louisiana, where he painted it in 1821. He believed it inhabited only the densest of wilderness swamps. Elliot Coues, in his Birds of the Washington, D.C. Region (1883) called this bird "extremely rare; only an accidental visitor."

Either the prothonotary has since increased greatly in numbers or its presence was somehow overlooked before. (Because today it is a common bird over much of the Eastern U.S. and is easily found in the environs of the Nation's Capital.)

Perhaps there is truth to both conjectures. There is evidence that this warbler is expanding its range northward, if not actually increasing in abundance. It is also likely that the birds were missed by earlier observers, since active birders were far fewer in those days, and the birds kept to the swamps and river bottoms, for the most part not of easy access.

It is these dark watery surroundings that add to the appeal of the prothonotary. It is hard to think of the bird without calling to mind its swampy, moss-hung habitat. The late Dr. J. J. Murray, dean of Virginia ornithologists, referred to it as "a flash of orange fire over dark waters." Dr. Frank Chapman, in his book on warblers, compared it to a torch gleaming in the night. He was describing the bird in the backwaters of the Suwanee River in Florida.

There, in the deep south, the prothonotary finds its greatest abundance. To the north, the center of distribution is along the Mississippi drainage, where it reaches southeastern Minnesota, central Wisconsin and southern Michigan. It breeds in good numbers along the Ohio, Wabash and Illinois Rivers. On the Atlantic coast, it does not move as far north, though it seems to be

expanding its range in these parts. Most texts indicate its range as "north to Virginia and Delaware" but it is now regularly reported from Long Island and New England.

In Virginia, the prothonotary was once thought restricted to the extreme southeastern corner of the state. It created quite a stir when, in 1928, a pair was found nesting at Dyke, near Alexandria. Nowadays, they nest much farther up the Potomac and on its tributaries. Similarly, they are now seen far up the James River drainage system, to Albemarle and Buckingham Counties.

Along these streams, the prothonotary places its nest not far from the water in any sort of excavation or hollow. Often it is a natural cavity in a rotted stub. Old woodpecker diggings are readily appropriated, but if the wood is old and soft enough, the warblers may themselves enlarge the cavity.

Bird houses are also acceptable, as are a variety of other unnatural situations. Their nests have been found in tool boxes, mail boxes, cigar boxes, abandoned autos, fruit jars, coffee cans and even in an old coat hanging in a waterside shed.

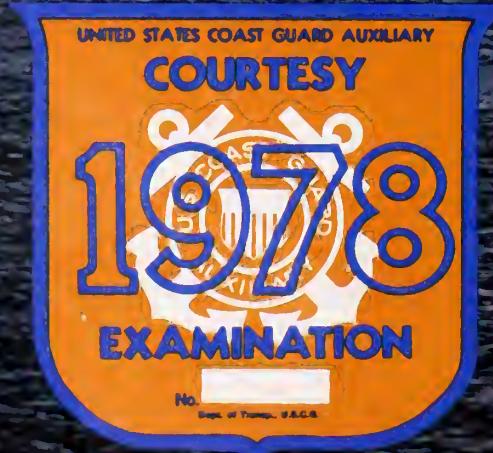
The nest itself, woven from mosses, rootlets, tendrils and fine grasses, shelters an exquisite set of eggs. On a ground of rich, rose-tinted cream, are delicate tones of brown and lavender gray spots. Young remain in the nest about ten days. In the northern parts of their range, these warblers raise but one brood; in the south, two sets of youngsters are usual.

By mid-September, the prothonotaries are gone, having set out for their winter home in the tropics. At this season, they enjoy the warmth of Central America and northwestern South America, from Nicaragua to Venezuela, Columbia and Ecuador. They begin the northward trek in March, finally reaching our latitudes in mid-April.

The name prothonotary alludes to the College of Prothonotaries Apostolic in the Roman Catholic Church. While celebrating Pontifical High Mass, they wear robes of bright yellow orange.

NATIONAL SAFE BOATING WEEK

JUNE 1-7



COURTESY MARINE
EXAMINATION WEEK
JUNE 3-11

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